

Amendments to the Claims

Claims 1 – 61 (cancelled).

Claim 62 (currently amended): A wide field of view scanner, comprising:

a scanning assembly constructed to provide a light excitation beam emitted from a light source in a scanning motion to an examined surface;

an objective lens associated with and displaced by said the scanning assembly arranged to provide an optical path from said light source to the examined surface and from the examined surface fluorescent light, excited in response to said excitation beam, to a light detector; said displaced objective lens and said scanning assembly providing said optical path having substantially constant length;

a translation system constructed to produce movement of the examined surface;
and

a data collection control and processing unit arranged to collect data during the scanning motion and process the collected data.

Claim 63 (new): The scanner of claim 62 wherein said scanning assembly includes oscillating support structure comprising a scan arm constructed to support said objective lens.

Claim 64 (new): The scanner of claim 63 wherein said support structure includes a periscope assembly arranged to provide said optical path including said objective lens.

Claim 65 (new): The scanner of claim 62 further comprising focusing system including a tilting mechanism constructed to tilt said examined surface for focusing light passing through said objective lens.

Claim 66 (new): The scanner of claim 62 wherein said data collection control and processing unit is constructed to collect optical data over an arcuate scan motion of said objective lens and arranged to time the data collection during the arcuate scan motion.

Claim 67 (new): The scanner of claim 66 including a data conversion system arranged to convert said collected data to a raster grid by averaging, for each raster point, the value of data points near the raster point, the values being weighted by their respective distances from the raster point.

Claim 68 (new): The scanner of claim 62 wherein said objective lens has a numerical aperture larger than 0.5.

Claim 69 (new): The scanner of claim 62 wherein said surface is part of a microscope slide comprising said biological material.

Claim 70 (new): The scanner of claim 62 wherein said surface is part of a DNA chip arranged for hybridization of a biological material prior to scanning.

Claim 71 (new): The scanner of claim 62 wherein said surface is part of a DNA chip comprising said biological material arranged for DNA sequencing.

Claim 72 (new): A wide field of view scanner, comprising:

- a scanning assembly including an oscillating support structure constructed to support and displace a micro-objective lens in a scanning motion, said oscillating support structure providing a constant optical path;
- a driver constructed to displace said support structure in an oscillating motion;
- a position transducer associated with said scanning assembly and constructed to provide a position signal corresponding to a position of said micro-objective lens during said scanning motion;
- a light source constructed to emit excitation light directed to an object including biological material;
- a optical detector constructed to detect fluorescent light excited in response to said excitation light from said object;
- a translation system constructed to produce movement of the object; and
- a data collection control and processing unit constructed and arranged to receive position signal from said position transducer and optical data from said optical detector.

Claim 73 (new): The scanner of claim 72 wherein said micro-objective lens is an aspheric lens.

Claim 74 (new): The scanner of claim 72 arranged for confocal detection of said fluorescent light.

Claim 75 (new): The scanner of claim 72 wherein said scanning assembly includes a periscope assembly arranged to provide said optical path including said micro-objective lens.

Claim 76 (new): The scanner of claim 75 wherein said micro-objective lens receives said fluorescent light stimulated by a spot of said excitation light passing through said micro-objective lens.

Claim 77 (new): The scanner of claim 72 constructed to generate an image from said detected fluorescent light.

Claim 78 (new): The scanner of claim 72 wherein said driver and said translation system are constructed and arranged to scan said object in form of a microscope slide.

Claim 79 (new): The scanner of claim 72 wherein said driver and said translation system are constructed and arranged to scan said object in form of a DNA chip.

Claim 80 (new): The scanner of claim 72 wherein said driver and said translation system are constructed and arranged to scan said object in form of a hybridization array.

Claim 81 (new): The scanner of claim 72 including an optical merging system constructed to merge at least two light beams into a single beam directed over said optical path extending over said support structure to said micro-objective lens

Sub 01

Claim 82 (new): A wide field of view scanner, comprising:
a scanning assembly including an oscillating support structure constructed to support and displace a micro-objective lens in a scanning motion;
a driver constructed to displace said support structure in an oscillating motion;
a position transducer associated with said scanning assembly and constructed to provide a position signal corresponding to a position of said micro-objective lens during said scanning motion;
a light source constructed to emit excitation light directed to an object including biological material;
an optical detector constructed to detect fluorescent light excited in response to said excitation light from said object; and
a data collection control and processing unit constructed and arranged to receive said position signal from said position transducer and optical data from said optical detector, said data collection control and processing unit providing a set of discrete position data each representing a position of said micro-objective lens, and generating a plurality of sample times based, at least in part, on a comparison of the position signal with the position data; and directing sampling said fluorescent light when enabled by the plurality of said sample times.

Claim 83 (new): The scanner of claim 82 wherein said scanning assembly includes a rigid periscope assembly arranged to provide said optical path including said micro-objective lens.

Claim 84 (new): The scanner of claim 83 wherein said micro-objective lens receives said fluorescent light stimulated by a spot of said excitation light passing through said micro-objective lens.

Claim 85 (new): The scanner of claim 82 constructed to generate an image from said detected fluorescent light.

Claim 86 (new): The scanner of claim 82 including a translation system constructed to produce movement of the object.

Claim 87 (new): The scanner of claim 86 wherein said driver and said translation system are constructed and arranged to scan said object in form of a microscope slide.

Claim 88 (new): The scanner of claim 86 wherein said driver and said translation system are constructed and arranged to scan said object in form of a DNA chip.

Claim 89 (new): The scanner of claim 86 wherein said driver and said translation system are constructed and arranged to scan said object in form of a hybridization array.
